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MOOCA – Massive Open Online Course for Accessibility

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Abstract

This paper describes the MOOC Accessibility (MOOCA) Partnership project funded by the Erasmus+ initiative. The project aims are to promote Universal Design and Accessibility for Information and Communication Technology (ICT) professionals, by developing a set of MOOCs (Massive Open Online Courses) for the provision of learning resources in this domain. Eight European universities participate in the project. The project consists of two phases (each 18 months). Phase 1 focuses on planning, implementation and evaluation of an introductory MOOC on some of the fundamental aspects of accessible design in ICT, while Phase 2 focuses on planning, implementation and evaluation of a set of online courses with more in-depth treatment of a series of topics. The specialized courses will serve as a logical follow-up for the participants of the introductory course who want to gain expertise in one of these topics. Phase 1 is the particular focus of this paper. The central themes are: the choice of MOOC platform; how learners engage with MOOCs and the consequent pedagogical challenges for learning activities; the development and deployment of MOOC materials and the accessibility needs, as well as the ethical and legal requirements, involved in the process. The paper also speculates on the ways that MOOCs might be used to promote Universal Design and Accessibility for ICT and other professionals and the possible trials and potential opportunities that might bring.

The MOOCAP project

This paper presents a brief overview of the Massive Open Online Course for Accessibility Partnership project (MOOCAP) which has the twin aims of establishing a strategic partnership around the promotion of Universal Design and Accessibility for Information and Communication Technology (ICT) professionals and developing a suite of Massive Open Online Courses (MOOCs) for the provision of learning resources in this domain (http://gpii.eu/moocap/). MOOCAP is funded by the ERASMUS+ Key Action 2 (KA2) grant program of the European Union under grant no. 2014-1-DE01-KA203-000679, through the German Academic Exchange Service (DAAD). The project Co-Ordinator is Professor Gottfried Zimmermann of Stuttgart Media University and the partners are the Technical University of Dresden, Germany; Johannes Kepler University Linz, Austria; Dublin Institute of Technology, Ireland; Oslo and Akershus University College of Applied Sciences, Norway; Université Paris 8, France; University of Southampton, UK; and the University of the Aegean, Greece. The University of York, UK has also contributed to the initial stages of the project. These partners were chosen because they have a significant history in developing and providing courses in the domains of Universal Design and Accessibility, as well as leading research and advocacy roles within Europe.

The CEN Workshop Agreement: Curriculum Training for ICT professionals in Universal Design, (2011) states that "In order for ICT industry to adopt Universal Design principles, methods and solutions, the professionals involved will need to acquire the necessary knowledge and skills. This is a crucial condition for an effective, as well as economic, change in management, services and production process in the ICT industry". The aim of the MOOCA partnership is to develop MOOCs to help these professionals acquire the necessary knowledge.

MOOCs will be produced in two phases. The first phase will see an introductory MOOC developed jointly by all partners. This will be followed by a suite of MOOCs addressing accessibility topics in more detail, for example it is proposed there will be MOOCs on Web Accessibility and eLearning. The focus of this paper is the introductory MOOC. The course is scheduled to run in January 2016 on the FutureLearn platform, subject to all legal aspects having been finalised and will introduce ICT Accessibility topics for Desktop, Mobile, Web and everyday living.

The introductory MOOC on Accessibility

The purpose of the initial course is to introduce the idea of accessibility with respect to ICT. In the next section the pedagogical challenges of the course will be discussed. Based on known issues with MOOCs such as high drop-out rates and the expected interaction of users with the course (Reich, 2014), it was decided to run the course over five weeks with each week requiring approximately 3-5 hours of engagement. It was also decided that each week

would promote major accessibility initiatives, so that students would engage with core accessibility strategies and ideas, and retain these even if they failed to complete the course.

The curriculum design for the introductory course has been influenced by our own courses, research and experiences, the CWA 16266:2011, and major accessibility resources such as the web accessibility guidelines (http://www.w3.org/TR/WCAG20/); the Irish National Guidelines on IT and Accessibility (http://universaldesign.ie/Technology-ICT/) and landmark reference books such as Cook and Hussey's "Assistive Technologies: Principles and Practice", (2008), or more recently, the practical "A Web for Everyone: Designing Accessible User Experiences" by Horton and Quesenbery (2014). In addition, work on standards provides valuable resources, such as ISO's Guide 71, (also known as CEN Guide 6) that although aimed at standards developers, is useful for everyone considering accessibility issues (https://www.iso.org/obp/ui/#iso:std:iso-iec:guide:71:ed-2:v1:en).

The proposed course covers accessibility across the broad categories of ICT namely desktop, mobile, web and every day devices. Week 1 introduces Accessibility in broad terms. Week 2 discusses Desktop Computing, alternative I/O and how the use of typical Desktop Applications can be compromised by poor choices. Mobile Technology is the focus of Week 3, again looking at alternative I/O and major mobile applications especially social media. Week 4 considers the Web and Web content Accessibility and finally Week 5 looks at Accessibility issues in everyday ICT, for example in ATMs and household appliances. Week 5 also introduces the more specialised MOOCs due in Phase 2 of the project.

Each week is further illustrated with User Stories (Kelle, Henke and Zimmermann, 2015). Studies have shown the potential of using personas to convey the needs and preferences of people with disabilities (Schulz & Fuglerud, 2012). And this in turn can help developers consider their requirements as pertaining to a wider range of users resulting in better, more accessible and useful applications. Also Baily and Pearson (2011) who developed a platform for teaching web accessibility to undergraduate students, used personas to describe information about assistive technology usage and specific interaction patterns by people with disabilities. It is hoped that similar benefits accrue from their use in the introductory course of the MOOCA project.

Currently, the design and development of the learning materials for the initial MOOC is nearing completion. It will be available on the FutureLearn Platform, (https://www.futurelearn.com/) hosted by one of the Partners, University of Southampton on behalf of the MOOCA project Consortium. The University of Southampton are already contributors to MOOCs on this platform and have also provided technical assistance to the partnership in the development of MOOC materials.

FutureLearn was chosen as the host platform for the introductory MOOC after one of the initial work packages of the project. Some of the critical success factors in the choice of

platform included capacity, potential audience, and scalability and a commitment to accessibility (https://about.futurelearn.com/terms/accessibility-policy/). In addition, a forward looking aspect of FutureLearn is that it is designed to run on mobile devices, in contrast to many other platforms, which are primarily designed for desktop use. Since this was viewed as a learning experience for the partnership, access to experienced MOOC developers was also taken into consideration. Since University of Southampton already had a presence on FutureLearn and were able to facilitate that aspect of development, Futurelearn was the project choice.

With a platform in place and content to be delivered the next aspect of MOOC design is to look at pedagogical and other considerations such as ethics and legal requirements which will shape the nature of how the course content is developed and delivered in the MOOC.

Developing content for the MOOC

Accessibility.

It is an obvious and primary goal of a course on Accessibility that the content itself be accessible. As already mentioned, the FutureLearn platform itself was chosen in large part because of its commitment to accessibility. The MOOCA partnership is committed to best accessible practice in producing learning materials for the MOOC following the most up-to-date international guidelines for accessible content especially the Web Content Accessibility Guidelines (http://www.w3.org/TR/WCAG20/).

Ethical Principles.

In order to ensure that the development of course materials is done to the highest ethical standards it was necessary to agree some guidelines for the entire project. These guidelines have at their heart the principles of Voluntary Informed Consent (Boddy et al, 2015). The process of establishing consent will be made available in a form that is accessible to the participant. If the participants fall within the categories of children or 'less powerful' individuals all necessary protocols in this regard must be followed including obtaining consent from a parent or legal guardian.

Any materials produced should also be respectful of the participants, especially disabled participants (Barnes, 1992). Consent forms should be accessible to participants and any data gathered must be held securely with due regard to Data Protection protocols (https://www.dataprotection.ie/). Confidentiality, anonymity and privacy of participants is maintained where appropriate.

Each partner will meet the ethical requirements of their own institution with regard to the production of learning materials which involve the participation of people with disability, for instance, for the Dublin Institute of Technology, the requirements are here (http://www.dit.ie/researchandenterprise/researchatdit/ethicsindit/content/ethicscommitt

ee/). If access to the participants is through an external third party, for example a service provider, then ethical protocols of the third party, in addition to the above principles will be followed.

Legal Challenges.

One of the more complex aspects of MOOC development revolves around copyright and ownership of the intellectual property rights (IPR) of the learning materials being used. This is especially difficult in a transnational partnership where different laws can apply in different countries. There are also different rights which may apply even in the same institution, where staff operate under different contracts.

It is a widely held view that permanent lecturing staff own the IPR of their course materials, though this is subject to challenge (Athlone IT, 2012). A parallel view is that the institute where the work is carried out owns the IPR of lecture notes and other materials, since this is carried out in the employ of the Institute. This would correspond with the view of the EU where materials produced in the employ of the company are owned by the company (European IPR Helpdesk, 2015). In the UK, a significant ruling by the notable judge Lord Eversheds in the case of Stephenson Jordan & Harrison v. McDonnell & Evans (1952) found that the default position lay with the lecturer in the absence of a specific contract giving ownership to the Institute or University (Pila, 2010b). Some Universities have included such terms in the conditions of employment for lecturing staff e.g. Strathclyde University, (http://www.strath.ac.uk/is/compliance/copyrightownership/). Within the MOOCA project, some staff have been hired, specifically to produce content for the university. In these cases IPR will rest with the university.

Further complications arise in the case of videos where the issue of performance rights of participants must be considered. It is standard practise to request that the participant signs a release form which assigns rights to the material to the developers and deals with aspects of the relationship such as future monetary claims of the participant on the video (Video University, 2015).

All this has significance for the MOOC when material is being deployed on a platform through a specific partner. How can the material be licensed for use in the MOOC? Who is responsible for issuing the license- is it the lecturer or the Institute? What assignments of ownership are necessary to allow the materials be used? What happens to materials such as University logos which are bound by strict terms of use and require specific permission from the University? If IPR of course materials is transferred from lecturer to the Institute to allow the Institute grant permission to the consortium to use the material, does the lecturer lose the right to use this material in their own courses? Can generic licences such as the Creative Commons licences offer sufficient protections of people's interests (http://creativecommons.org/). These are difficult questions and should be considered early in the project especially in a transnational partnership.

Pedagogy.

The pedagogical value of MOOCs is at the heart of spirited debate (Bali, 2014; Guzdial, 2013; Glance et al., 2013). Since, at the time of writing, while the introductory MOOC on Accessibility of the MOOCA project is at an advanced stage of development, it hasn't run yet. Therefore it is not possible to offer any opinion based on qualitative or quantitative data gleaned from actual experience. However there are design challenges based on the possible learning activities available to MOOCs and other MOOC attributes that are worth pointing out.

MOOCs by definition are designed to cater to a massive audience with far greater numbers involved than traditional face to face teaching. Therefore, traditional metrics of good undergraduate teaching such as Chickering and Gamson's (1987) "Seven Principles of Good Practice in Undergraduate Education" are immediately challenged. The first of these principles is encouragement of student–faculty contact. However in an online course where there are potentially thousands of students it is next to impossible to offer equivalent deep and frequent contact to all students (Bali, 2014). This is particularly true in the realm of providing feedback on assessment. So the focus shifts dramatically from a teacher centred model of education to the community of learners themselves (Stewart, 2013). This decentralization of the teaching role is a novel experience for those used to teaching face-to-face.

Consequent on the massive nature of MOOCs, are the kinds of learning materials which characterise them. These include videos, online quizzes, discussions and peer assessment (Glance et al, 2013). Videos are widely used in online courses, for example the KHAN academy (https://www.khanacademy.org/). The challenge is to produce engaging professional looking videos. Film-making then becomes part of the learning curve for the MOOC contributor. A recent article by a French university detailed their commitment to MOOC-making as setting up a complete department to handle filming and including several studios with equipment and staff and technicians with the relevant experience to make 'TV-style' productions (Pompey, 2014).

Quizzes are also a widespread activity on online courses. The fact that they provide automated scoring is an obvious attraction in MOOCs. While there is a fear that they might promote shallow learning, there are many who opine that, used properly, they can enhance learning. For example, they can be used to help construct understanding incrementally through a series of steps and also as mechanisms for confidence building for new users, (Quinn & Reid, 2003). Quizzes also provide students with an opportunity for retrieval learning, which is the practice of enhancing long–term memory of facts through recalling information from short–term memory (Glance et al, 2013, Agarwal *et al*, 2012; Karpicke and Roediger, 2007).

Since it is impossible for the lecturer to provide assessment feedback to the volume of students taking the MOOC, peer assessment is the main mechanism for providing feedback. Peer assessment has its critics. For example White (2013) described Peer Assessment as "crowd sourcing grading responsibility to students who have *not yet proven mastery, or even understanding, of the material!"* However peer review can be a facilitator for building a community of learners (Burgstahler, 2007), and encouraging co-operation amongst students (Bali, 2014). Peer review is also used in Universal Design activities such as the Universal Design challenge in the form of Audience awards, (http://universaldesign.ie/Awards/).

Peer discussion is also an enabler of student centred learning on MOOCs. However in order to encourage the idea of a safe space to promote participation, some "netiquette" or rules of conduct must be laid down (Butcher & Wilson-Strydom, 2013). The FutureLearn Terms of Use are unequivocal in regard to respectful use of the platform (https://about.futurelearn.com/terms/) and this is appropriate with respect to Peer Discussion so that rude or intimidating contributions can be avoided.

As the MOOCA partnership heads towards the deployment of its first introductory MOOC on Accessibility, it is worth reflecting on these aspects of MOOC development. For those not used to delivering online courses it involves reconsidering the activities that may have informed the core of previous teaching practice. For example the role of the teacher at the centre of learning activity is radically reduced. The role of students at the heart of the learning community is greatly enhanced.

The exemplar MOOC methods of video, quizzes and peer discussion and review are approaches to aspects of learning that may not have been used before and MOOC developers should consider the training requirements in these skills. Similarly, the expectation of high quality professional standard videos may present another learning curve. Of course, it is important to remember that quality of the medium still needs good content, and this is the purview of the educator, but hours of 'talking heads' are probably not acceptable any longer.

The legal aspects of MOOC development are significant and require clear and agreed policies to be put in place to deal with this aspect. This is particularly true in a transnational partnership with many kinds of institutional partners. Ideally this should be done before embarking on serious development. Similarly a clear protocol for ethical and accessible development needs to be put in place.

Summary and Conclusions

In summary the MOOCA partnership is nearing the end of the first phase of the project and is readying the introductory MOOC on accessibility for launch in early 2016. In developing these materials the ethical, legal and pedagogical issues proved to be a significant learning

experience in its own right. The lessons learned will inform the next set of MOOCs which will be developed in phase 2 of MOOCA.

These lessons also apply to MOOC development outside the scope of the MOOCA project, in particular if a MOOC were to be developed to promote Universal Design. Typically Universal Design courses involve product reviews, auditing products for adherence to Universal Design principles, Design challenges and discussions about bad design and who is the user. Visual media such as pictures and video can be useful to promote awareness and these are staples of MOOCs.

However, it is well to be aware that the learning activities are drawn from a relatively narrow range of presentation and interaction tools, viz: video, quizzes, peer discussion and review. How effective will activities such as Design Challenges be, when they are moderated by peer review? There is no doubt that a MOOC for Universal Design could have serious potential to bring awareness of Universal Design to a much bigger audience. We are about to experience how many people will engage with the introductory MOOC on Accessibility and this may indicate the public appetite for such endeavours.

Finally the MOOCA project has been an enlightening journey into the world of MOOCs. It has been a steep learning curve. The initial MOOC is nearing launch date. The MOOCA partnership extends an invitation to try out the course on FutureLearn for yourself.

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References

P.K. Agarwal, P.M. Bain, and R.W. Chamberlain, 2012. "The value of applied research: Retrieval practice improves classroom learning and recommendations from a teacher, a principal, and a scientist," *Educational Psychology Review*, volume 24, number 3, pp. 437–448.http://dx.doi.org/10.1007/s10648-012-9210-2

Bali, M. (2014). MOOC Pedagogy: Gleaning Good Practice from Existing MOOCs. MERLOT Journal of Online Learning and Teaching, pp 44-56

C. Bailey, E. Pearson, Development and trial of an educational tool to support the accessibility evaluation process, in: Proceedings of the International Cross-Disciplinary Conference on Web Accessibility, ACM, New York, NY, USA, 2011: pp. 2:1–2:10. doi:10.1145/1969289.1969293.

Barnes C. (1992) Disabling Imagery and the Media. Halifax : Ryburn Publishing.

Burgstahler, S. (2007). *Universal design of instruction: Definition, principles, and examples.* University of Washington. Retrieved from http://www.washington.edu/doit/Brochures/Academics/instruction.html.

Boddy J, Neumann T., Jennings S., Morrow V., Alderson P., Rees R. & Gibson W.(2015). The Research Ethics Guidebook. A Resource for Social Scientists. Retrieved from http://www.ethicsguidebook.ac.uk

Butcher, N. & Wilson-Strydom, M.(2013). A guide to quality in online learning.Dallas,TX:Academic Partnerships. Retrieved from http://www.academicpartnerships.com/docs/default-document-library/newbooklet15_singleb.pdf

Chickering, A.W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. AAHE Bulletin,39(7),3-7.

Cook, A. M. and Polgar, J. M. (2008). *Cook and Hussey's assistive technologies: Principles and Practice (3rd. ed.)*. St. Louis: Mosby Elsevier.

CWA 16266:2011,(2011) CEN Workshop Agreement: Curriculum Training for ICT professionals in Universal Design

Glance, D.G.,Forsey,M.,& Riley,M.(2013).The pedagogical foundations of massive open online courses.First Monday, 18 (5). Retrieved from http://www.firstmonday.org/ojs/index.php/fm/article/view/4350/367353

Guzdial, M.(2013,January4).MOOCs are a fundamental misperception of how teaching works [Weblog post].Retrieved from http://computinged.wordpress.com/2013/01/04/moocs-are-a-fundamental-misperception-of-how-learning-works

Horton, S and Quesenbery, W.(2014) A Web for Everyone, Designing Accessible User Experiences Rosenfeld Media; January 2014; ISBN: 978-1933820972.

Kelle, Sebastian; Henka, Alexander; Zimmermann, Gottfried: A persona based extension for massive open online courses in accessible design. IN: *International Conference on Applied Human Factors and Ergonomics (AHFE) (to appear)*, 2015.

J.D. Karpicke and H.L. Roediger, 2007. “Repeated retrieval during learning is the key to long–term retention,” Journal of Memory and Language, volume 57, number 2, pp. 151–162.http://dx.doi.org/10.1016/j.jml.2006.09.004

Pila J,(2010a) Who Owns the Intellectual Property Rights in Academic Work?, European Intellectual Property Review (2010)

Pila J,(2010b) “Revisiting Section 39(1) of the Patents Act: The Ownership of Academic and Professional Employee Inventions” Oxford Legal Research Paper Series 40/2010; available at http://ssrn.com/abstract=1599369.

Pompey, J. “Dans les coulisses…de la creation d’un MOOC” Pantheon Sorbonne Magaxine, no 10 Nov-Dec 2014, pp 44-47

Reich J: MOOC Completion and Retention in the Context of Student Intent in Educausereview (Dec 2014) retrieved from http://er.educause.edu/articles/2014/12/mooc-completion-and-retention-in-the-context-of-student-intent

Quinn, D. and Reid, I. (2003). Using innovative online quizzes to assist learning . AusWeb (Australasian World Wide Web conference) 2003

Stewart, B.(2013).Massiveness + openness = new literacies of participation? MERLOT Journal of Online Learning and Teaching,9(2),228-238 . Retrieved from http://jolt.merlot.org/vol9no2/stewart_bonnie_0613.htm

White, J.(2013, June 26). The ultimate student guide to navigating the writing MOOC. MOOC News & Reviews. Retrieved from http://www.moocnewsandreviews.com/the-ultimate-student-guide-to-navigating-the-writing-mooc

T. Schulz, K. Skeide Fuglerud, Creating personas with disabilities, in: Springer-Verlag, Berlin, Heidelberg, 2012: pp. 145–152. doi:10.1007/978-3-642-31534-3_22.